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THE SACRED NARCOTIC LILY OF THE NILE: *NYMPHAEA CAERULEA*

WILLIAM A. EMBODEN¹

A suggestion that certain water lilies might have narcotic properties is found in their frequent use as a motif in funerary art among the Egyptians as well as Mayans. The work of Rands (1953, 1955) traced the New World distribution of water lily motifs throughout Mayan art and made important mythic associations. From the middle of the Classical period until the inception of the Mexican periods, the water lily motif is extremely common and highly varied in its representation. Rands makes the association between this tradition and that in Asiatic art.

Although Conard, in his 1905 monograph on the water lilies, speaks of the importance of *Nymphaea caerulea* Sav. (Fig. 1) in a decorative and an emblematic sense, he cannot attribute any mythic associations other than the obvious and does not mention the possibility of water lily cults. He further denies the assertions of earlier writers that the Nymphaeaceae have any real medicinal value or unusual chemical properties. This represents the current status of thought among most ethnobotanists, pharmacologists, and anthropologists.

In extending the earlier works of Rands, Dobkin de Rios (1974, 1977) investigated the psychotropic flora and fauna in Mayan culture and noted the frequent use of the water lily motif in association with the toad (*Bufo marinus*). These toads contain bufotenine in glands located near the tympanum. The substance is released in the matrix of a milky exudate when the amphibian is aroused. Bufotenine is capable of inducing profound hallucinations after breaking the blood-brain barrier. This led Dobkin de Rios to the assertion that Mayan depictions of the water lily were probably more than decorative and constituted a source for the development of a belief system that could be explained, in part, on the use of the toad and the water lily to alter states of consciousness. This hypothesis met with some hostile reactions from anthropologists, who found such a stylistic approach inadequate, even in light of the amassed evidence.

Emboden (1974) touched upon the use of *Nymphaea caerulea* as a narcotic and has been in contact with Dobkin de Rios concerning the use of the water lily flower as a narcotic. This paper explores the use of water lilies as narcotics in the old world and especially in ancient Egypt. In a future paper coauthored with Dobkin de Rios we will treat transcultural phenomena related to the use of narcotic water lilies in a comprehensive manner.

Of the several Mayan sites in which water lily motifs have been found, perhaps the most dramatic are the murals at Bonampak, which are so like some of the Egyptian murals that the similarity is startling. The association of the water lily with the sensory modes pointed out by Rands (1953) is strongly in evidence. In one of the principal Bonampak murals, which I have seen only recreated in the Peabody Museum of Harvard University, there is depicted a dance ritual in which water lilies are associated with the noses and foreheads of some of the dancers. Percussion instruments are played and many of the dancers are masked. Trumpets are being blown as this unexplained ceremony takes place. Diaz (1977) has commented on these depictions and supports the contention that the water lily was used as a ritual narcotic. He quotes from poetry of a ritual nature that is a kind of hymn to the "precious aquatic flowers" and the "flowers that cause vertigo, the beautiful narcotic flowers." The Nahuatl term *quetzalaxochiacatl* meaning

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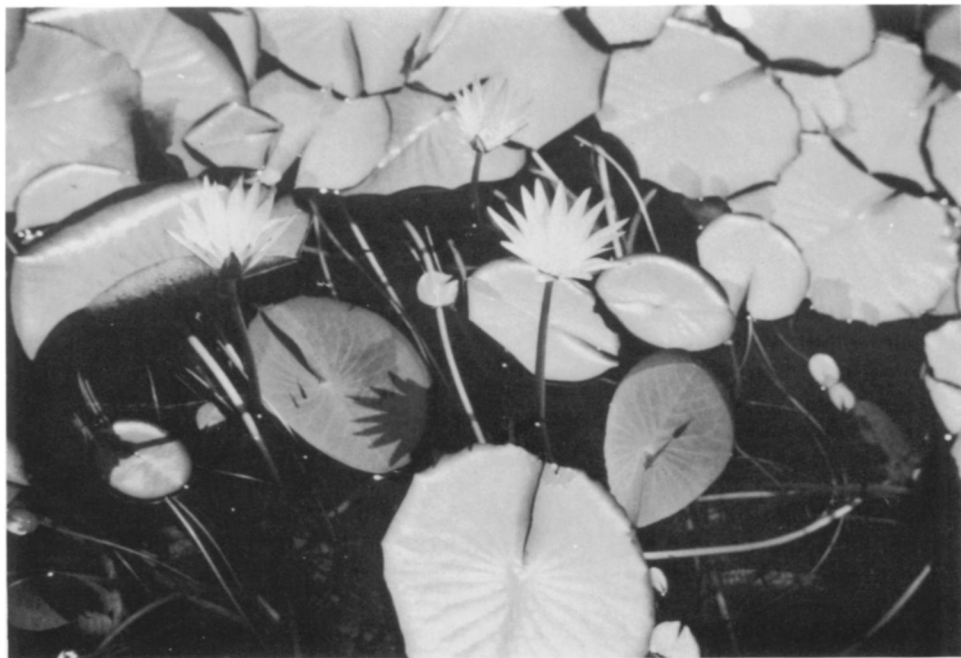


FIG. 1. *Nymphaea caerulea* Sav. (photographed in Egypt in July of 1977).

“precious water flower” may refer to *Nymphaea ampla*, according to Diaz. Supportive of this assertion is his finding a contemporary recreational use involving the crude rhizomes in Chiapas, Mexico. It was asserted that these provoked “prolonged and powerful hallucinatory effects.” Following this lead with chemical analyses, Diaz isolated aporphine alkaloids from the plants. These compounds differ from apomorphine by two hydroxyl groupings. Apomorphine is a synthetic derivative of morphine and both are classified in the United States as narcotics. Although apomorphine is probably best known for its emetic action, low doses tend to tranquilize while higher doses may induce psychoses in some individuals. Diaz also mentioned earlier analyses that identified nuciferine and nornuciferine that may play roles in the intoxication derived from eating fresh rhizomes. Mention was not made of the use of *N. caerulea* as a narcotic, and Diaz accepts the Conard thesis that this plant was used only in an emblematic sense. This paper will attempt to alter that contention.

Shamanic stratification was as important to Mayan priest-shamans as it was to the Egyptians. In both cultures, the true priests occupied centers that were forbidden to the shaman of the people who involved himself in curing and divination. The higher priestly caste carried out such activities as the prediction of lucky and unlucky days, oracular revelation and formulating spells. The Harris Magical Papyrus, the Salt Magical Papyrus, and the Beatty Papyrus VII are all almost totally occupied with the magic of a priestly caste, a magic that never filtered down to the common man. Vogt and Ruz (1964) have suggested the same hierarchy for the Maya, and in both instances these priestly castes were served by assisting artisans, officials, craftsmen and commentators of lesser rank, but still of a secret society.

In Egypt, real commentary begins only in the Fifth Dynasty, and, among the Maya, Vogt and Ruz (1964) have traced the origin of records to the Proto-Classic

period. Both cultures built temples for private practices of priestly cults which were not open for public religious ceremonies. Festival days in Egypt brought pilgrims to the temples but not into them. Spectacles such as the avenging of the death of Osiris were staged, but these had nothing to do with the reality of the shaman-priests. Such spectacles served to strengthen the vast gap between the complex theologies at Heliopolis, for example, and the belief systems of the people. In later periods, the mortuary temples became the gathering place for secondary cults that usually developed out of veneration for real or imagined heroes who might be invoked. The "official religion" involved daily rituals on the part of temple priests. Egyptologists have remarked on the uniformity of these rituals at divergent sites. Based upon a center at Heliopolis (now Giza), the king became the personification of Horus in the worship of Osiris. Likewise, in pre-Osirian times the cult centered about the god Ra who had an origin in the blue water lily and who predated Osirian beliefs, laying a foundation for these. Ceremonies were focussed upon the linking or fusion of the king and the god Osiris. The general populace knew little more than that such ceremonies were for the well-being of their king, a condition that would reflect upon their own lives.

The elements that Rands (1953) found commonly associated with the water lily in the New World are exactly those depicted in funerary art in ancient Egypt. The death and resurrection of Osiris is symbolized in the blue water lily. *Nymphaea caerulea* blooms for three consecutive days, with its flowers borne on stalks that lift the flower about 18 inches above the surface of the water. Each day it opens at around eight in the morning and closes about noon.

The symbol of three was of great shamanic importance. Numerous incantations were tripartite, a sort of trinity existed between Osiris, Horus and the pharaoh. We are told in the legends of ancient Egypt that Osiris was murdered by Seth and his dissected body was cast into the waters of the Nile. He was made whole again by his wife and sister Isis, but variations on this legend indicate that he became the sacred blue lily of the Nile, opening with the ascendance of the sun and closing with its descent in the sky. That Osiris could be a flower, the sun, creator god, a mystical personage brought back from death, etc. is indicative of the ability of the Egyptian mind to harmonize disparate elements. His image is also to be found in the scarab beetle (dung beetle) of which the female imbeds its egg into a ball of feces and the male rolls this ball into the sun during the day and back into some crevice at night. Thus Osiris had a further alter ego in this insect. Budge (1900) found individuals in the Sudan who still involved themselves in devouring these beetles in what he alleged to be a vestige of the cult of Osiris. This was an element of "eating magic" which was a sort of communion of the most intimate sort with those elements that were godly manifestations. This leads to the assertion that I shall set forth. Because the water lily was the incarnation of Osiris, it would most certainly be devoured as was the scarab beetle. The effect of an experience such as this would be an alteration of one's conscious state or the ecstatic separation of body and spirit. I shall adduce evidence to this end.

As the propitiators at Delphi held laurel leaves in their mouths, so those who approached the temples of Osiris and Horus are depicted holding water lilies. Fortunately, tomb paintings have maintained their mineral colors, and we can clearly define the water lilies as *Nymphaea caerulea* and not another species. Schweinfurth (1883) analyzed flowers from the mummified remains of Ramses II, the princess Nzi-Khonsu, and a mummy marked "Kent." In each instance the flowers in their garlands were *N. caerulea*.

Nymphaea is first encountered in the Fifth Dynasty, becomes important in the Ninth Dynasty, and from the Fourteenth Dynasty to the Eighteenth Dynasty is



FIG. 2. A detail of the wife of Menna from a Theban tomb of the 18th Dynasty. She wears a fillet of blue water lily petals with an open flower over the brow into which a mandrake fruit has been inserted. In her hands she carries the same flowers.

almost ubiquitous. It has been traditional to treat such representations as merely emblematic or symbolic offerings. The flower is seen with comestibles in piles of offerings to the dead, on unguent jars, on the fillets making up the head bands of queens, and often in association with the narcotic mandrake, *Mandragora officinarum* (Fig. 2). It is not the rhizome that is depicted, but always the flower. Frequently, the flower has the fruit of the mandrake drawn into its center. If the flower is to be considered as a comestible, we must remember that it is acrid and bitter. Even the rhizome was used only as famine food, and this after thorough leaching and roasting or boiling. The seed was retted away from the pulpy mass in which it was embedded and cracked so that the starchy embryo could be removed to make a kind of crude flour. We must keep in mind that many plants that have narcotic properties exhibit these in only certain tissues. For example, the opium poppy produces a highly narcotic exudate when the laticifers of the fruit are broken, and yet the seed of that same fruit may be eaten in great quantities with impunity. This suggests that a decoction of the flower of *Nymphaea caerulea* may not have the same properties as leached, cooked rhizomes or seed.

Some scholars have attempted to identify the sacred flower of the ancient Egyptians as the "lotus." This is not only inconsistent with tomb painting and descriptive early texts in which the glyph is clearly *Nymphaea*, but neither papyrus nor the lotus existed as natives in Egypt prior to about 700 B.C. when they were brought by the Assyrians. *Nelumbo nucifera*, the lotus, as both an esculent rhizome and a large seed, is also a fine food source once the bitter plumule of the embryo is removed. By the end of the 19th century the plant could hardly be found in the Nile Delta, while the indigenous *Nymphaea caerulea* was still relatively abundant. It is sad to say that, during my journey to the Nile Delta flood plains in July of 1977, *Nymphaea* was seen sporadically and seemed to be highly endangered. This is due principally to the absence of the once numerous marshes, increasing salt concentration and pollution of the drainage ditches that help to irrigate the agricultural crops. Nevertheless, the persistent botanist will find the plants in some areas outside of Cairo on the way to Giza.

The toad or frog is often encountered in zoomorphic clay lamps from ancient Egypt. These were used for burning castor oil (*Ricinus communis*) mixed with salt to provide smoke-free illumination. The hole in the top of these lamps is often surrounded by a rosette of petals forming a water lily. Again we have an association that Dobkin de Rios (1974) found with a high frequency in Mayan ceramics. The metamorphic nature of these amphibians and the possibility of bufotenine extraction and use would make them especially meaningful images. Likewise, the sacred water lily in association with the toad-frog would place it above all other floral representations, given its narcotic properties.

The Papyrus of Ani, better known as the Book of the Dead, is perhaps the most important document to emerge from the period of about 1500 B.C. to 1350 B.C. (Fig. 3). Written for the dead, these spells, incantations, and magical formulae can be traced to 1350 B.C., and some are even predynastic, according to Budge (1913). In these texts, we encounter a chapter entitled "Transformation into a water lily flower." Some have called this simply "lily," others "lotus," but, given the early date of the texts and the late advent of the lotus from Assyria, it is impossible to use such surrogates. It is essentially a magical shamanic transformation. The water lily was initially the favorite of Ra, and a product or emanation from his being. Ani wished to have the power to transform himself into the sacred blue water lily so that his body might have new birth and ascend daily into heaven. Another version of this transformation allowed Ani to transform himself into Ptah (creator god). Importantly, the accompanying vignette is a human head springing from the open flower of *Nymphaea caerulea* growing in a

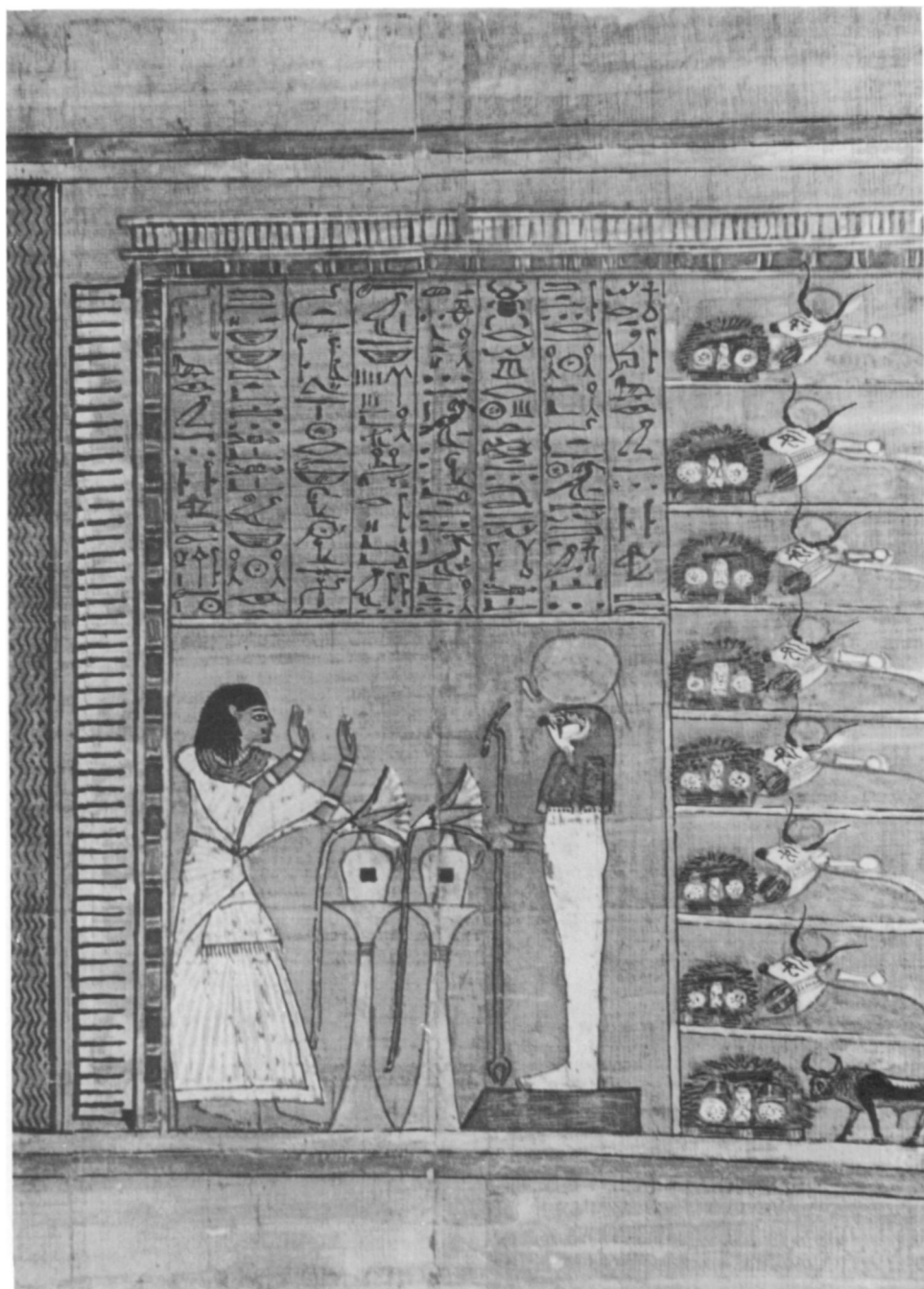


FIG. 3. Illustration from the Papyrus of Ani. Horus is petitioned by an offering of two vessels whose contents are symbolized by *Nymphaea caerulea* draped over them. Early 19th Dynasty.

pool of water. The text of this is attributed to "Osiris Ani" who says, "I am the holy water lily that come forth from the light which belongs to the nostrils of Ra, and which belongs to the head of Hathor. I am the pure water lily that come forth from the field of Ra." Later versions of the same text petition the water lily with

requests for visions and soul flight. Such supplications suggest the power of the water lily and are important stylistic clues to the chemical nature of the flower which might be used to provide such transcendent experiences.

It is worthy at this point to recall that in popular legends Ra was the conqueror of Hathor when, in a malevolent state, she was going to destroy his people. Ra enjoined the Egyptian people to make enormous quantities of beer at Heliopolis and to mingle this with their own blood and with mandrakes. The greedy Hathor drank many amphoras of this and fell into a protracted sleep of thousands of years, allowing the people of Ra to live. The legend implicates an intoxicant and the narcotic *Mandragora* in a tale of shamanic power. This would reinforce the contention that the contextual use of water lilies in association with sensory modes has similar implications. The proof must be found somewhere between legend and a convincing chemical profile that suggests the power of *Nymphaea caerulea* to alter states of consciousness.

In 1910 Goris and Crete indicated that they had isolated a new compound from *Nuphar luteum* (formerly *Nymphaea lutea*) which they dubbed nupharine. Not much was made of this discovery until the year 1941, when it seemed that some of the world's opium sources might be lost. It had been rumored by some earlier explorers that various water lilies might serve as an opium substitute. In 1941 Delphaut and Balansard described their experiments with water lilies. Using the powdered rhizomes of *Nymphaea alba* in alcohol they were able to induce a deep and profound sleep in mice, dogs and eels after an initial spasmolytic action.

More interesting were reports from the few individuals who had made observations on the effects of *Nymphaea* on human behavior. Mordrakowsky (as cited by letter in Raymond-Hamet, 1941) reported the *flowers* of water lilies to be narcotic and to provoke a hypnotic state when ingested. One of the earliest sources for such assertions came from Descourtiz who wrote in his *Pictorial and Medical Flora of the Antilles* (1822), that flowers of species found in the Antilles were "narcotic and able to replace opium." While the species in question was probably *N. ampla*, this first report gained credence when Pobéguin (1912) noted that both *N. stellata* and *N. caerulea* had the same powers. On page 49 we read, "... a decoction of the flower is narcotic." However, all investigations to date suffer from the absence of fine species characterizations and failure to note human response to utilization of floral decoctions beyond stating that a narcosis is provoked. I will describe these psychogenic effects in a forthcoming issue of *Mexicon* (Emboden, in press).

From the foregoing, one element is evident: water lilies of several species and genera are able to intoxicate by inducing a hypnotic state after an initial period of neural stimulation usually reflected in nervous spasms. Would this not be the perfect trance material of the shaman? It would lead to behavioral patterns that are described for shamanic states in many and diverse cultures.

A question now comes to mind: what evidence do we have for ritualistic use of *Nymphaea caerulea* in early Egyptian dynasties? We must again work from stylistic evidence coupled with what we now know of the narcotic properties of the flowers. It has not been characteristic for most cultures to reveal the nature of their most sacred ritual materials. In ten thousand verses of the *Rig-Veda* of the ancient people of north India, we can find no specific indication of the plant that was soma. Scholars must work from iconographic and textual clues from many sources. One of these clues in investigating shamanic ritual and its mediators in ancient Egypt is the ritual chalices used. These are usually calcite and in the form of a water lily. They are inlaid with blue pigment or lapis lazuli and are most often found between the Eighteenth and Twenty-second Dynasties. One of these, found inside the door of the tomb of Tutankhamun, is exemplary of the

distinction between the ritual chalice and the drinking vessel. This white calcite chalice is in the form of a single flower of *Nymphaea lotus*, the white water lily of the Nile. Its supporting handles are each comprised of an open flower with two buds. On its lip is inscribed a toast to long life and happiness. It is the observation of the great Egyptologist I. E. S. Edwards (1976) that cups in the form of the white water lily were used as drinking vessels, while those that represent the blue water lily were used for ritualistic purposes.

Further evidence for the use of the blue water lily as a psychoactive substance may be adduced from the famed golden shrine of Tutankhamun. In the second scene of the top register, the queen pours some liquid into a vessel from a vase in her right hand, while in her left hand she holds a water lily and a poppy. In the lower left register, the king pours some liquid into the right hand of his queen as he holds a bouquet of water lilies and poppy flowers. The one inscription between the king and queen is translated as "Adoration with offerings may the Great Enchantress receive thee, O Ruler, beloved of Amun." Here we have an association between the two narcotic flowers in association with ritual libation. Although some have stated that "water" is being poured, it would hardly seem the most probable liquid, given the nature of the scene and its association with a shrine, although water was a great offering to the dead and important in the ceremony of "the opening of the mouth."

Unguent vases, as they have been termed, were almost always found emptied of their contents in tombs that had been looted. That of Tutankhamun was no exception. Robbers considered the contents of these vases to be more important than the vases themselves, for these were believed to contain *didi*, the elixir of life that could convey immortality. It would have been much easier to sell goat-skins full of this precious fluid than the exquisite vessels in which they had been stored. One such vessel is in the Cairo collection of Tutankhamun and is elaborately carved of two blocks of alabaster. It may be characterized by the open-work calcite handles representing the union of upper and lower Egypt, balanced on a lower block of two humanoid figures and a central support. The top of this unguent jar bears the face of the goddess Hathor, who wears a necklace from which is suspended a *Nymphaea caerulea* flower with two flanking buds. From the central flower there is suspended a single narcotic mandrake fruit. Could this be a clue as to the contents of the vase? Petals of this same flower support the base of the vessel and are seen as a central collar about it. The presence of the ankh as a symbol of life and two metamorphic tadpoles have further shamanic overtones. It is estimated that 400 liters of such fluid was removed from this tomb alone. Is it logical to consider it a perfume or rather that which allows a man to live forever as a god? We must also question the use of the term "unguent vessel" and "unguentarium" in the catalogues of these pieces. An unguent is, by definition, a salve and incapable of being poured from vessels with small orifices. The characterization most probably came from the attempts to characterize the residue found in these vessels. Usually it was oleoresinous or it had dried into a block of dark residue. Neither of these could have characterized the fluid state of the original contents.

A single such example suffers the possibility of being unique, but we can cite many such vessels in which the narcotic water lily and mandrake are juxtaposed. One of the great ones is the leomorphic vase from Tutankhamun's tomb. This standing lion is crowned with a corona of *N. caerulea* petals, floral rosettes that suggest the stigmatic surface of opium poppy capsules, and papyrus motifs. The figure rests its left paw on the symbol for protection and stands on the same floral motifs below which is a row of mandrake fruits. The lion is part man and part beast. It is also the alter ego of the god Bes, the dwarf with a mane, ears, and tail



FIG. 4. Meriton, consort to Semenhkara, offers him two mandrake fruits and a bud of *Nymphaea caerulea* while she holds more of these same flowers in her left hand. Semenhkara leans on a staff or crutch. The scene is of ritual healing. Colored limestone. Circa 1350 B.C. Staatliche Mussen, Berlin-Dahlem.

of a lion. As the protector god, Bes wears the royal insignia of the king on his chest. Inside, remains a matrix of dried lipid of an unidentified nature. Because it was a usual practice to extract floral materials by wringing them through linen, it would be necessary to keep these volatile substances from evaporating. The most obvious solution would be to find a fat or oil that would combine with the extracts to prevent them from evaporating. While the lighter fractions would be lost in time, the fat or oil residue would remain. Gas chromatography combined with mass spectroscopy would provide important critical data on the precise

nature of these remains. Gabra (1956) identified opiates in the residue of one such "unguent vessel" of the Eighteenth Dynasty. A comprehensive survey of the total composition of many vessels remains as an important piece of research.

In writing of the young Tutankhamun, biographers have noted the delicate health of the boy king. No one has indicated the exact nature of this weakness. His queen, Ankhesenamun, is depicted on the exquisite throne chair of the king ministering to him. In her left hand she holds a blue vessel in the form of an opened *N. caerulea* flower. The royal collars of both are yokes decorated with mandrakes and the blue water lily flowers. The queen wears the crown of Hathor. The usual interpretation of this scene is that the queen is anointing her king with perfume. Is this possibly an offering of a medicament as understood in the terms of a thing of power? We are compelled to recall the famous limestone depiction of King Semenkhhara and his consort Meriaton (Fig. 4) who are "promenading in a garden." In this latter depiction the King leans on a staff or crutch, as his consort offers two mandrake fruits and the bud of *Nymphaea caerulea*. In her left hand she holds one more bud and two open flowers from the same sacred blue water lily. This dates to approximately 1343 B.C., while the throne chair of King Tutankhamun was executed after his marriage and before his premature death in 1343 B.C. Both scenes suggest to me some ritual healing involving these sacred narcotic plants.

Perhaps that which seems lacking is a broader shamanic context in which to place the blue water lily. A few more examples may suffice to illustrate this assertion. In the tomb of Amenemhet at Thebes there is a fresco showing a sacrificial bull being led to the funeral slaughter. A woman holding three water lilies leads the procession. Sacrificial bulls were garlanded with blue water lilies and mandrake fruits. One interpretation of this has been that both give a pleasant scent. This is true but does not explain why these two should be selected out of the vast fragrant flora of the Nile region and should so often be used in conjunction with the opium poppy. Also in the tomb of Menna at Thebes a funerary voyage of the dead takes place on a ship the bow, stern and rudder of which are figured as water lilies. The Egyptologist Mekhitarian (1954) states, "We must never lose sight of the fact that the choice of motifs in Egyptian pictures, even in those which seem to have no connection with religious subjects, is always guided by ritual considerations."

In the Theban tomb of Nebamun and Ipuky, we encounter a widow with bared breast squatting before the anthropoid figure of her coffered husband. She pours dust on her head as a ritual gesture of grief. Springing from the base of the figure is a column of blue water lilies and poppy capsules bound together and topped with three palm fronds. Again, it is difficult to imagine that the combination of the narcotic poppy and blue water lily is merely fortuitous. As for the palm, it was the source of palm wine that could have provided a solvent for the poppy and water lily derivatives. It is worthy of note that these capsules have been "milked" for their opium as indicated by the vertical slashes on the capsules. This also establishes the poppy as *Papaver somniferum* and not one of the other non-narcotic species of the area.

In the tomb of Userhet at Thebes, we see another fresco in which a goddess arises from a lake and pours a magical fluid into golden cups. Mourners wear resinous, scented mourning cones on their heads. From the cones blue water lilies extend over the forehead. The fluid is indicated by wavy lines. Is this an elixir of forgetfulness that may be obtained from the aquatic water lilies? We know that such a painting was not merely decorative but of a magical order. It has been said that these representations, dictated by a priestly caste, are hieroglyphs written large.

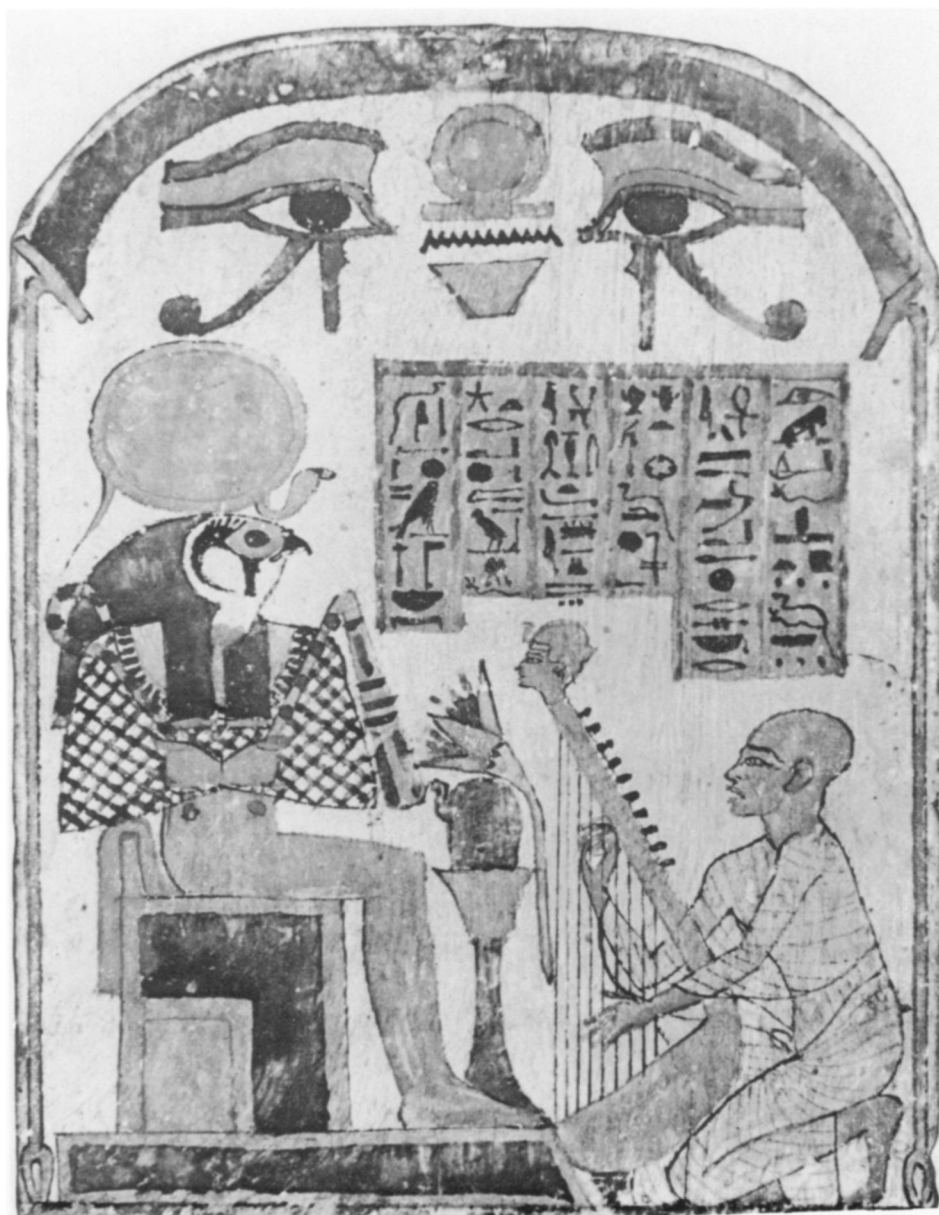


FIG. 5. A wooden stela depicting the enthroned Ra-Harakhte (Horus of the Horizon) being offered a vessel with its contents symbolized by the blue water lily.

Most depictions of the veneration of the god Ra-Harakhte or Horus (Fig. 5) show the propitiators offering the god a vessel covered with a water lily. Possibly the *Nymphaea* is a clue to the contents of this vessel. The god Horus was known as "the healer" and as such was venerated. One fine example of this is to be seen in the limestone stela of Upuaut-mes of the Nineteenth Dynasty.

Sennofer was curator of gardens and parks during the reign of Tuthmosis III (Eighteenth Dynasty). He and his sister Merit were beloved of the Pharaoh and,



FIG. 6. A Theban tomb fresco of the 18th Dynasty depicting Sennofer and his sister. Before his nostrils, around the three vessels, above the vessels, and in the left hand of Sennofer are blue water lilies.

thus, were buried in a regal fashion at Thebes. In his tomb, a fresco depicts him seated in the tree of heaven with Merit kneeling next to him (Fig. 6). Before him is a table with three vessels. Each is in the form of a water lily bud; the central one is partially open. Around each is wound the peduncle of the flower terminating in the flower proper. Above these are three water lilies; the central flower is open. In his left hand, Sennofer holds the water lily before his nostrils. This was a gesture that was believed to lead to the purification of the nostrils. In his right hand is a stylized water lily chalice. This is perhaps the most comprehensive depiction of *Nymphaea caerulea* associated with any figure in a tomb painting. One cannot argue that Sennofer was a commoner for his tomb and its frescos

reveal the esteem in which he was held during his lifetime. In death, he sits on a chair with the legs of a lion and supported by the tree of heaven which confers immortality on those resting there. His attitude is that of a pharaoh. Had he been a commoner, his fate would have been to be salted in natron and relegated to obscurity.

We are left with the inescapable conclusion that the blue water lily, *Nymphaea caerulea*, was exploited for its narcotic content in order to provoke the shamanic state of ecstasis among a priestly caste in ancient Egypt. These initial observations and comparisons with recent investigations into similar New World traditions may lead to a very different way of viewing Egyptian art and artifacts and may provide new insights into the mysteries of a priestly caste in that great ancient civilization. In a future paper, the author will adduce further evidence to support the contention that water lilies in the Old World and in the New World were important vehicles of shamanic ecstasis and have been disregarded in this context of use.

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ERRATUM

In the article by Ernest P. Imle on “Hevea rubber—past and future” (*Economic Botany* 32: 264–277. 1978 [1979]), the following correction is made.

Page 276, item 4 in the Summary: For “*Hevea*” read “resistance to SALB”